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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,829	08/28/2003	Wataru Taki	2936-0194P	6644
2292	7590	08/05/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			NGUYEN, MINH T	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,829	TAKI ET AL.	
	Examiner	Art Unit	
	Minh Nguyen	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/28/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,060,297, issued to Ma et al.

As per claim 1, Ma discloses a frequency conversion apparatus (Fig. 2) comprising:
a high-frequency amplifier (26, column 4, line 44, RF preamplifier) for amplifying an input high-frequency signal (INPUT);
a mixer (36, column 4, line 53) for mixing an output signal of the high-frequency amplifier with a local oscillation signal (column 4, lines 53-56);
a filter (38, BPF) for restricting a band of an output signal of the mixer to permit passage of only components within a predetermined band (it is a function of a bandpass filter); and
a variable filter (28, column 4, line 49, tracking filter) that is provided between the high-frequency amplifier and the mixer and of which a cut-off frequency is controllable (column 5, lines 3-5),
wherein the cut-off frequency of the variable filter is so controlled as to vary with a reception channel signal (column 5, lines 1-20 and table 1).

As per claim 2, the recited limitation is disclosed in column 8, lines 21-23, i.e., “low-pass filtering ...”.

As per claim 6, the recited PLL reads on PLL 44 which also controls oscillator 32.

2. Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,112,070, issued to Katsuyama et al.

As per claim 1, Katsuyama discloses a frequency conversion apparatus (Fig. 1) comprising:

a high-frequency amplifier (LNA 3, low noise amplifier) for amplifying an input high-frequency signal (from antenna 1);

a mixer (MIX 5) for mixing an output signal of the high-frequency amplifier with a local oscillation signal (VCO 8);

a filter (IF-BPF 6) for restricting a band of an output signal of the mixer to permit passage of only components within a predetermined band (it is a function of a bandpass filter);
and

a variable filter (variable BPF 4) that is provided between the high-frequency amplifier and the mixer and of which a cut-off frequency is controllable (see Fig. 2),

wherein the cut-off frequency of the variable filter is so controlled as to vary with a reception channel signal (also see Fig. 2).

As per claim 3, the recited variable bandpass filter reads on BPF 4.

As per claim 6, the recited PLL reads on PLL 9 which also controls oscillator 8.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,010,400, issued to Oto.

As per claim 1, Oto discloses a frequency conversion apparatus (Fig. 1) comprising:
a high-frequency amplifier (25, column 3, lines 54, broadband amplifier) for amplifying an input high-frequency signal (from input 21);
a mixer (22) for mixing an output signal of the high-frequency amplifier with a local oscillation signal (26);
a filter (BPF 29) for restricting a band of an output signal of the mixer to permit passage of only components within a predetermined band (it is a function of a bandpass filter); and
a variable filter (23 and 24, column 3, lines 25-26), wherein the cut-off frequency of the variable filter is so controlled as to vary with a reception channel signal.

Oto does not explicitly disclose the variable filter is located between the amplifier and the mixer as called for in the claim. Instead, Oto discloses the amplifier 25 is between the variable filter and the mixer.

However, as known by a person skilled in the art, switching the position of the variable filter (23 and 24) and the amplifier (25) in the Oto circuit provides the same signal at the input of the mixer 22, i.e., these arrangements are art recognized equivalent.

It would have been obvious to one skilled in the art at the time of the invention was made to rearrange the position of the variable filter (23 and 24) and the amplifier (25) in the Oto circuit. One skilled in the art would be motivated to do so because he knows they are art recognized equivalent and by rearranging the parts in an electronic circuit, especially when the circuit is operated in a high frequency environment, interference noise (EMI) can be reduced.

As per claim 4, the recited variable lowpass, highpass filters read on LPF 24 and HPF 23, respectively.

As per claim 5, the recited variable highpass filter reads on HPF 23.

As per claim 7, Oto discloses the cut-off frequency is controllable and changed for every band (column 3, lines 55-57), VHF, UHF, ... but he does not explicitly the method for controlling is voltage synthesizing method as called for in the claim.

The examiner takes Official Notice the fact that using digital control via microprocessor for the purpose of tuning channels in household TV sets are popular and well-known practice because such method provides accurate tuning.

It would have been obvious to one skilled in the art at the time of the invention was made to use voltage synthesizing method to provide tuning for the Oto's TV tuner for the advantage discussed herein above.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Nguyen whose telephone number is **571-272-1748**. The examiner can normally be reached on Monday, Tuesday, Thursday, Friday 7:00-5:30.

Art Unit: 2816

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



8/3/04

Minh Nguyen
Primary Examiner
Art Unit 2816